



IPW

Docket No. 434-263

Patent

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of :  
:   
DAVID A. ATWOOD :  
:   
Serial No.: 10/774,619 :  
:   
Filed: February 9, 2004 :  
:   
For: CATALYTIC CLEAVAGE OF PHOSPHATE ESTER BONDS BY  
BORON CHELATES

**INFORMATION DISCLOSURE STATEMENT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Applicant discloses to the Examiner under 37 CFR 1.56, and 37 CFR 1.97-1.98, as revised (1135 OG 13) and effective March 16, 1992, the information listed on the attached form PTO - 1449. This information may be found to be material to this invention under the current applicable patent law and as interpreted by the US PTO Rules, as cited above. Review and consideration of the listed references/information during substantive examination of this application is respectfully requested.

Applicant specifically emphasizes that this statement, and/or the act of identifying these references, is not to be construed as an admission that all or any of the references are prior art to the specific invention disclosed and claimed.

Also, nothing in this statement is to be construed as a representation that this

S.N. 10/774,619

is the only material information to be found, or the best. It, however, is the only information known to the applicant at this time that is believed to meet the "materiality standard" of the law. If additional qualifying references or other information is discovered in the future, a prompt submission will be made to fulfill applicant's continuing duty of disclosure under 37 CFR 1.99.

Respectfully submitted,

KING & SCHICKLI, PLLC



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PTO/SB/08B (10-01)  
Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)		<b>Complete if Known</b>	
		Application Number	10/774,619
		Filing Date	02/09/2004
		First Named Inventor	David A. Atwood
		Group Art Unit	
		Examiner Name	
Sheet 1 of 3	Attorney Docket Number	434-263	

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T <sup>2</sup>
	1	DAVID et al. Accelerated hydrolysis of industrial organophosphates in water and soil using sodium perborate. Environmental Pollution. Vol. 105. 1999. pp. 121-128	
	2	WEI et al. Chelated Borates: Synthesis, reactivity, and cation formation. Inorg. Chem. Vol. 37. 1998. pp. 4934-4938.	
	3	WEI et al. Synthesis and Structures of Salen-Supported Borates Containing Siloxides. Inorg. Chem. Vol. 38. 1999. pp. 3914-3918.	
	4	BROWN et al. An intramolecularly Stabilized Arylboron Dibromide. Heteroatom Chemistry. Vol. 9. No. 1. 1998. pp 79-83.	
	5	YANG et al. Chemical detoxification of Nerve Agent VX. Acc. Chem. Res. Vol. 32. 1999. pp. 109-115.	
	6	BLASKO et al. Recent Studies of Nucleophilic General-Acid, and Metal Ion Catalysis of Phosphate Diester Hydrolysis. Acc. Chem. res. Vol 32. 1999. pp. 475-484	
	7	OIVANEN et al. Kinetics and Mechanisms for the cleavage and Isomerization of the Phosphodiester bonds of RNA by bronsted acids and Bases. Chem. Rev. Vol. 98. 1998. pp. 961-990.	
	8	GAJDA et al. Highly efficient phosphodiester hydrolysis promoted by dinuclear copper (II) complex. Inorg. Chem. Vol. 40. 2001. pp. 4918-4927.	

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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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	9	JONES et al. Enhanced base hydrolysis of coordinated phosphate esters: the reactivity of an unusual cobalt (III) amine dimer. J. Am. Chem. Soc. 1984. Vol. 106. pp. 7807-7819.	
	10	VANCE et al. Functional group convergency in a binuclear dephosphorylation reagent. J. Am. Chem. Soc. Vol. 115. 1993. pp. 12165-12166.	
	11	MCCUE et al. Hydrolysis of a model for the 5'-cap pf mRNA by dinuclear copper (II) and Zinc (II) Complexes. Rapid hydrolysis by four copper (II) ions. Inorg. Chem. Vol. 38. 1999. pp. 6136-6142.	
	12	SCRIMIN et al. Comparative reactivities of phosphate ester cleavages by metallomicelles. Langmuir. Vol. 12. 1996. pp. 6235-6241.	
	13	YAMAMI et al. Macrocyclic heterodinuclear ZnII/PbII complexes: synthesis, structures, and hydrolytic function toward Tris (p-nitrophenyl) phosphate. Inorg. Chem. 1998. Vol. 37. pp. 6832-6838.	
	14	KAMINSKAIA et al. Reactivity of u-hydroxodizinc (II) centers in enzymatic catalysis through model studies. Inorg. Chem. Vol. 39. 2000. pp. 3365-3373.	
	15	CHAPMAN et al. Selective hydrolysis of phosphate esters, nitrophenyl phosphates and UpU, by dimetric zinc complexes depends on the spacer length. J. Am. Chem. Soc. 1995. Vol. 117. pp. 5462-5469.	
	16	MOLENVELD et al. Highly efficient phosphate diester transesterification by a Calix [4] arene-based dinuclear zinc (II) catalyst. J. Am. Chem. Soc. Vol 119. 1997. pp. 2948-2949.	

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	17	BENTON et al. The cleavage of ethers with boron bromide. I. Some common ether. J. Am/ Chem. Soc. Vol. 64. 1942. pp. 1128-1129.	
	18	KIM et al. Direct conversion of silyl ethers into alkyl bromides with boron tribromide. J. Org. Chem. Vol. 53. 1988. pp. 3111-3113.	
	19	BAZZICALUPI et al. Carboxy and diphosphate ester hydrolysis by a dizinc complex with a new alcohol-pendant macrocycle. Inorg. Chem. 1999. Vol. 38. pp. 4115-4122.	
	20	EMBER LOIS. EPA Destroying chemical arms: No easy task. C & EN. August 30, 1999. pp. 11-12	
	21	RANU et al. Dealkylation of ethers. A review. Organic preparations and procedures int. Vol. 28. No. 4. pp. 371-409.	

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